



Toilet Training to a Child with Multiple Disabilities Using a Toilet Training Package Including “Token Economy” System: A Case Study

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Abstract

Independent toileting is an important developmental skill for multiple disabled individuals coping with many problems during their daily life. Effective toilet training interventions are carried out in accordance with the using of operation processes together, such as positive reinforcement or punishment. The aim of this study is to teach daytime toilet training to a child with multiple disabilities through the system of token economy before teaching the child nighttime toileting through nighttime toilet training method. According to the results, the daytime toilet training program in which the token economy system was utilized and nighttime toilet training had an effect on toilet training of a child with multiple disabilities. The child learning the ability of daytime and nighttime toileting could maintain this ability 30, 40 and 50 days after completing the training.

Keywords

Daytime toilet training
Nighttime toilet training
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Positive reinforcement

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Introduction

The ability of independent toileting is one of the most important cornerstones of human development (Sells-Love, Rinaldi, & McLaughlin, 2002; Stadtler, Gorski, & Brazelton, 1999). The lack of toileting ability can lead to a number of negative consequences including diminished personal hygiene and physical comfort, social stigma and reduced participation in community sources (Cicero & Pfadt, 2002; Smith & Chaneb, 2016). Like many other self-care abilities (eating, getting dressed etc.), the ability of toileting belongs to the essential abilities that enable an individuals' full participation in social environments (school, restaurants, workplaces etc.), and to become independent (Cicero & Pfadt, 2002; Sells-Love et al., 2002). Furthermore, it paves the way for the improvement of self-esteem of the child after achieving each selfcare skills (Stadtler et al., 1999).

For children with normal development, toilet training follows these steps: at first the control of bowel, then bladder and finally bladder at night (Sells-Love et al., 2002; Snell & Farlow, 1993; Sönmez & Varol, 2008; Stadtler et al., 1999). Mostly at the 18th month these children give a sign of being ready for toilet training (Stadtler et al., 1999); however, the learning of daytime toileting generally starts at the 24th -36th months and for almost all children finish at the 48th month (Berk & Friman, 1990; Snell & Farlow, 1993; Sönmez & Varol, 2008; Stadtler et al., 1999). Nevertheless, this process may delay or take longer for severely handicapped children and children with nervous system diseases such as paralysis of the brain, spinal cord damage etc. (Snell & Farlow, 1993; Snell & Delano, 2011). In their study aiming to compare the bladder and intestine control period of 45 children having cerebral palsy, these children's

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37 siblings presenting typical development and other 37 children presenting typical development, Öztürk et al. (2006), revealed that children having cerebral palsy acquire bladder and intestine control later than their siblings and other children presenting typical development. According to the result of this research, the siblings of the children with cerebral palsy acquired nighttime urination control approximately in the 35th (24th- 36th), daytime urination control in the 31st (25th – 36th); and nighttime defecation control approximately in the 26th (24th- 28th), daytime defecation control in the 27th (24th- 29th) month. Besides, the peers of the children having cerebral palsy acquired nighttime urination control approximately in the 27th (22nd- 33rd), daytime urination control in the 26th (23rd – 29th); and nighttime defecation control approximately in the 25th (23rd- 27th), daytime defecation control in the 26th (24th- 28th) month. On the other hand, the children with cerebral palsy acquired nighttime urination control approximately in the 47th (35th- 58th), daytime urination control in the 47th (35th – 59th); and nighttime defecation control approximately in the 45th (36th - 55th), daytime defecation control in the 45th (35th- 55th) month.

Regarding their children, the process of toilet training becomes one of the hardest development stages for both children and parents because of the social expectations and pressure they feel (Stadtler et al., 1999). Nevertheless, the children with normal development can learn how to toilet naturally through processes implemented by parents unsystematically (Herbert, 1996; Snell & Farlow, 1993; Snell & Delano, 2011; Varol, 2005). On the other hand, for the children with severe mental disabilities, developmental and additional disabilities, some additional supports can be needed such as negative reinforcements both in learning and continuation (Luiselli, 1997), the creation of stimulus control (Snell & Farlow, 1993; Snell & Delano, 2011) and the use of a wetness alarm (Ricciardi & Luiselli, 2003; Sells-Love et al., 2002; Steinberg, Williams, & DaRos, 1992). For these children, the toilet training progress may become a compelling progress requiring effort (Fleisher, 2004; Smith & Chaneb, 2016).

Since the 1960s at the field of toilet training of the children with disabilities, plenty of approaches have put forward certain package programmes. The effective toilet training programmes contain a couple of features including generating of stimulus control (Azrin & Foxx, 1971; Post & Kirkpatrick, 2004; Wilder, Higbee, Williams, & Nachwey, 1997), giving clues and forming toilet steps (Snell & Farlow, 1993; Snell & Delano, 2011; Taylor, Cipani, & Clardy, 1994), reinforcement after toileting, mid-range punishment in the case of wetting herself (over correcting) and decay (Azrin, Bugle, & O'Brien, 1971; Hagopian, Fisher, Piazza, & Wierzbicki, 1993; Mahoney, Van Wagenen, & Meyerson, 1971). Some methods of toilet training require a special device which is placed in the pants and signals the cases of wetting herself during the training (Azrin & Foxx, 1971; Mahoney et al., 1971; Post & Kirkpatrick, 2004). In the method of quick toilet training, the stimulus control is generally practised through fluid overloading of a person (Azrin & Foxx, 1971; Post & Kirkpatrick, 2004; Wilder et al., 1997). The method, in fact, the effect of quick nighttime toilet training on acquiring nighttime toilet control was presented in these studies (Averink, Melein, & Duker, 2005; Azrin, Hontos, & Besalel-Azrin, 1979; Azrin, Sneed, & Foxx, 1973; Azrin & Foxx, 1971; Azrin & Thienes, 1978; Cocchiola, Martino, Dwyer, & Demezzo, 2012; Didden, Sikkema, Bosman, Duker, & Curfs, 2001; Kroeger & Sorenson, 2010; LeBlanc, Carr, Crossett, Bennett, & Detweiler, 2005; Rinald & Mirenda, 2012; Saloviita, 2000, 2002; Sells-Love et al., 2002; Taylor et al., 1994; Wilder et al., 1997). However, implementation of the quick toilet training method has remained limited, due to the reasons such as the use of repellent stimulus, an increase in problem behaviors resulting from over correcting, rather than the result based ones, adopting preventive attitudes in the changes regarding the training of children with disabilities, rehabilitation centres where children with disabilities are trained and unqualified staff who are not familiar with technological improvements in the process of research based toilet training (Cicero & Pfadt, 2002).

Before daytime toilet training, some specific points need to be identified. (Bettison, 1982; Herbert, 1996; Snell & Delano, 2011; Snell & Farlow, 1993; Sönmez & Varol, 2008). These points are the individual's having own regular urinary pattern and the existence of the duration of dryness at regular intervals (Herbert, 1996; Snell & Delano, 2011; Sönmez & Varol, 2008; Snell & Farlow, 1993; Varol, 2005), and lastly the need of the person being at least two years old or much older (Snell & Farlow, 1993). In

order to understand the duration of staying dry and thereby planning of the intervals for going to toilet during the training, the duration of staying dry is being kept recorded (Baker & Brightman, 1995; Sönmez & Varol, 2008; Snell & Farlow, 1993). Regarding this, it has been put forward by certain programmes that for recording the duration of staying dry either for at least two up to seven days or for at least two weeks up to thirty days should be calculated (Snell & Farlow, 1993). Recording the dryness, the diaper should be checked in every fifteen minutes (Snell & Farlow, 1993) or every half an hour from the waking hour until getting to sleep, and it should be recorded as wet or dry (Sönmez & Varol, 2008; Varol, 2005).

Should the child, trained daytime toilet training, goes to the toilet three fourths of the day or at longer intervals, then nighttime toilet training can be initiated (Snell & Farlow, 1993). At the nighttime training, the intensive programmes have been generally developed, in particular, for the children with disabilities, on the other hand some methods which are effective for nondisabled enuretic children and adults could be also effective for children with severe disabilities, as with daytime training. Aforementioned methods contain; traditional nighttime toilet training, simple fading processing phases, as well as utilizing the moisture signal device alarming the wetness on the bed and quick nighttime toilet training (like quick daytime toilet training) (Snell & Farlow, 1993). Reducing fluid intake and taking child to the toilet before going to bed, waking her/his up one or one and half hour after sleeping and controlling whether it is dry or wet (if it is wet, the pyjamas should be changed and if it is dry, she/he should be taken to the toilet), and lastly in the morning once again the wetness should be checked and if it is dry, rewarding her/him are the steps followed during the traditional nighttime toilet training (Fredericks, Baldwin, Grove, & Moore, 1975; Linford, Hipsher, & Silikovitz, 1972; Snell & Farlow, 1993). Even though the studies in the literature regarding nighttime toilet training, in particular, quick nighttime toilet training are available (Azrin et al., 1973; Azrin et al., 1979; Azrin et al., 1974; Saloviita, 2000), unfortunately no research have been carried out in traditional nighttime toilet training.

There are a limited number of studies regarding the individuals affected by disabilities in the national literature. These studies either deal with whether daytime toilet training for children with mental disabilities or autism should be given in institutions or at home (Özcan & Cavkaytar, 2009; Sönmez, 2008) or suggest that the family training program is effective in teaching daytime toilet training (Özcan, 2004). To the best of our knowledge no studies regarding nighttime toilet training or investigating the components of toilet training were found in the literature.

The processes of positive reinforcement have been adopted especially for individuals with disabilities (Luiselli, 1997; Thompson & Iwata, 2005). While social care, foods, activities and token economy are commonly used stimulus, positive reinforcement is the most commonly used process during teaching someone a certain behavior (Luiselli, 1997). Smith and Chanab (2016) examined the studies regarding toilet training carried out between 1971 and 2014. They showed that reinforcement was used in the 26 out of 30 studies they included in their study. In Rinald and Mirenda's (2012) study, which was investigated in the scope of the study, positive reinforcement was suggested to be effective both on acquiring toilet control and improving toileting skill. Therefore, token economy, one of the positive reinforcement applications, was utilized in this study. In the same study, Smith and Chanab (2016) reported 5 research in which nighttime toilet training was carried out and as a common point, it was observed that "excessive liquid intake" was used in these studies. However, unlike other studies, "stopping liquid intake before going to bed and taking to the toilet" was employed instead of "excessive liquid intake" in our study.

When the studies concerning children with multi disabilities and suffer from visual loss were examined in the literature, it was found that there is a study by Luiselli (1997) in which a child was trained to acquire daytime toilet control using negative reinforcement and another study by Lancioni (1980) in which a child with visual loss, who was deaf and had severe intellectual disability was trained to acquire daytime toilet training by increasing liquid intake and decreasing food intake, reinforcing excretion in the toilet and punishing wetting the clothes. Our study; however, aims to help a child who suffers from visual loss and has multiple disabilities to acquire daytime toilet control first, then

nighttime toilet control using a toilet training package including token economy system. This study is significant in that it sets an example for parents and experts on how day and nighttime toilet training should be given to children with multiple disabilities. Besides, this study is thought to pave the way for experts who work with children with visual loss for the preparation and application of the tactual form of token economy system. This study differs from other studies in that it uses positive reinforcement, stopping liquid intake before going to bed and taking the child to the toilet as well as using the traditional method which includes waking the child up once at night and taking him/her to the toilet. In this regard, the study is thought to make a significant contribution as a practical method to the literature.

Method

Participants

The Child

Ece, 6 years old, at a level of ninety percent of vision loss in her both eyes, is a girl having Bilateral mikroftalmi (H44.9) + Serabral Palsi (G80.0) induced at a level of ninety six percent orthopaedic deficiency, as well as developmental delay which affects her cognitive skills. Besides, due to some limitations such as orthopedic deficiency, lack of stimuli caused by visual loss and being unable to walk and discover alone, she has developmental delay which affects her cognitive skills when compared to her peers. She uses disabled chair, and with the help of her mother she can sit and stand up. All her self-care needs such as getting dressed/undressed and eating and other daily life needs are met by her mother and Ece cannot fulfill any of these needs. She always consumes liquid foods like soup, milk etc. She refuses to eat solid foods. Ece urinates and defecates in her nappy, and when it is suggested that she should go to the toilet (mother: "Could you please tell us when you need to urinate so that we can take you to the toilet, dear Ece?, and Ece: "No, I won't say that", "And why?", and she replies: "I just don't want to say that", then goes on talking about another subject by saying: "Mom.. is my sister coming today?" etc.), so she refuses this suggestion. She can respond to two or more-word questions using two or more words. Besides the students with visual disabilities, the ones who do not have any disabilities study there with her as well. Meanwhile, Ece receives education individually -twice a week for fifty five minutes- at the private special education and rehabilitation centre providing education for students with disabilities.

The mother

Ece's mother is a high school graduate housewife. She implemented the toilet training package with Ece at home and she also kept staying dry, which is one of the requirements of toilet training and progress records as well as the records regarding the continuation of the toilet control that Ece acquired.

The researchers

The first researcher completed a doctoral program in the education of the intellectually disabled, and has been lecturing on "Applied behavior analysis, teaching of daily living and social skills to the intellectually disabled, behavior modification" for 10 years and "teaching practice" for 16 years. Besides, she carried out teaching the toilet training package to the mother, the analysis of the baseline data from the staying dry records that the mother kept, the daily progress that Ece made regarding toilet control from the analysis of the progress check forms as well as the calculations of the data regarding maintaining daytime toilet control that Ece acquired.

The second researcher completed a doctoral program in special education for the handicapped, and holds a master's degree in the effectiveness of token economy approach on providing appropriate behaviors with visually impaired students. She has been working as an academic staff at the department of teaching the visually impaired for 26 years and has been doing research on the teaching of visually impaired children with multiple disabilities for the last 10 years. Besides, she has been lecturing on the education of children with severe and multiple disabilities in undergraduate and postgraduate classes as well as conducting "teaching practice" classes where there are students with multiple disabilities at the school of the visually impaired.

She took part in the preparation of the tactual token economy table for Ece and its introduction to her. Moreover, she also performed the validity evaluations of the baseline data of the staying dry forms that Ece's mother kept as well as her daily progress regarding toilet control.

Setting

The whole training process took place in the living room and toilet of Ece's house. Her toilet was a squat-toilet as is seen in figure 1 below, and since she uses a disabled chair, a commode was put onto the squat-toilet as can be seen in figure 2 below.

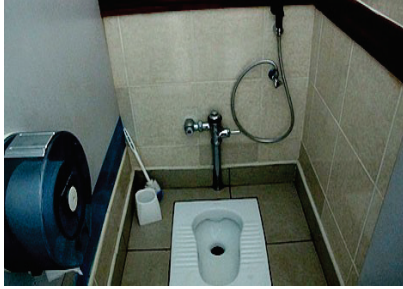


Figure 1. A squat-Toilet



Figure 2. The Commode

Materials

First of all a "Parent Meeting Form" was developed with the aim of determining what the child is able to do in the field of development based on her mother's statements, her daily routines, features of the toilet at home, the characteristics of the child's behaviors and effective reinforcements'.

Effective reinforcements were learned for Ece as a result of the interview with her mother to develop a token economy table. The tactual symbol table in figure 3 was developed to help her get the reinforcements at the end of the day and follow the process during the study. Since she has a visual loss at %90 and is analphabetic, the days on the table and the symbols to be won consists of objects. Besides, the names of the days were written in Braille under the objects symbolizing them.

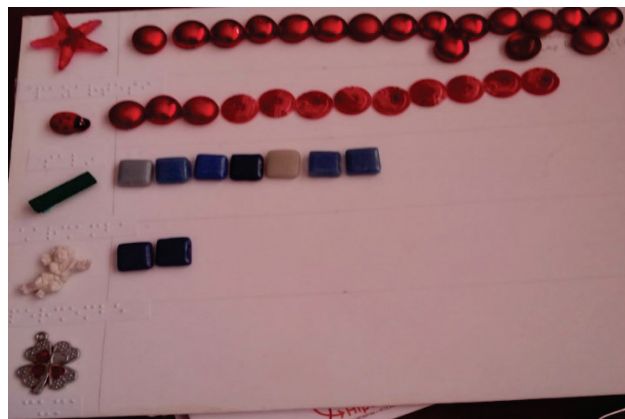


Figure 3. Table of Symbols

Documents having the steps of day and night toilet training were prepared to use in the training of the mother. These documents include the to-do list for the mother in the maintenance of day and nighttime toilet training and determination of stay dry period. However; "Duration of Staying Dry Record Form" has been developed in order to utilize it for determining at which intervals Ece stays dry before starting daytime toilet control. Lastly, "Daytime Toilet Control Progress Record Form" has been developed with the purpose of recording Ece's urinate and defecate times during daytime toilet training practiced with her mother, as well as writing down where and how she does, and besides these, "Nighttime Toilet Control Progress Record Form" has been developed for recording the progress in the

nighttime toilet control. These forms were also used to gather the baseline, implementation and observation data of the research.

Design

AB pattern, one of the single subject patterns and quasi-experimental, was used in the study during the process of “teaching the control of daytime and nighttime toileting”. At the A phase, the dependant variable was observed in a natural period, as well as the data was being recorded. At the B phase, the independent variable was implemented, and meanwhile the observation of the implementation and recording of the independent variable were done (Alberto & Troutman, 1986; Richards, Taylor, Ramasamy, & Richards, 1999). The reason why AB pattern was chosen is that the study is a sample of implementation practiced with a single subject.

Dependent and independent variables

The dependent variable of the research is the level of Ece’s performing toilet control independently. The independent variable, on the other hand, is the toilet training package including token economy that Ece’s mother implemented.

Procedure

The experimental period of the study includes the followings; the implementation of toilet training package with the mother and the observation of Ece’s progress through visits and phone calls. Toilet control training package consists of; the determination of duration of staying dry by the mother, taking the child to the toilet periodically by looking at the results of dryness duration during daytime, nighttime toilet control, reinforcing the targeted behavior according to token economy system, ignoring accidents, cleaning nappy and lastly keeping records.

The Implementation of the Tactual Symbol Table for Token Economy System. Before the implementation of the tactual symbol table for token economy system, what it was and how it was going to be implemented was explained Ece by the second researcher. During the explanation, Ece and the second researcher were sitting next to each other. First, by holding her hands, the second researcher had Ece examine the whole table by touching it and explained its purpose of use. Then, she had her examine the day symbols on the chart and said which day they correspond. Furthermore, by letting her to examine the symbols that they use each time she urinates in the toilet, she told Ece that she will get one of these symbols when she uses the toilet. Besides, it was added that the symbols would be counted by her mother in the evening and if she obtained enough symbols, she could get the predetermined rewards for herself. Lastly, she was told that if she urinates in the toilet for a week, she would get one of the reinforcements of “a portable inflatable pool” or “staying over at her cousin’s”. The introduction process of the token economy system to Ece was recorded using a camera by the first researcher. During the time when the second researcher was explaining the token economy system to Ece, her mother was present in the setting and observed the study. Besides, training was given the mother regarding the use of token economy system. During the toilet training, except for the times when Ece peed on her pants, her mother stuck a symbol on the symbol chart by saying “I am giving you a symbol since you urinated in the toilet.”

Since the criterion for urinating in the toilet was at least %80 a day, in the case of meeting this criterion at the end of the day, these symbols were converted into one of the reinforcements previously determined together with her mother such as “calling her teachers on the mobile”, “watching a video on the laptop or smart phone”, “eating instant tomato soup” or “playing the digital speaking cat game”. These reinforcements were also utilized in nighttime toilet control and when she wakes up dry in the morning. After having urinated in the toilet for a week, Ece was rewarded with one of the big activity prizes of a portable inflatable pool or staying over at her cousin’s at the weekend.

Mother Training. Mother’s training: In this research, Ece’s mother was trained in how to keep stay dry record, daytime toilet training, token economy system and nighttime toilet training, respectively.

Training of keeping stay dry record: On the first visit to Ece's house, the first researcher and the mother sat at a table next to each other. In this session, the process of toilet training was explained her broadly and by introducing the stay dry form to her, a model was set on how to fill in this form for Ece. Then, by giving an empty form, the mother was asked to explain and fill in the form for a day as an example. While she was rehearsing the behavior, the researcher provided feedback on the forgotten or uncompleted parts of the form as well as answering her questions regarding the form. All this process was recorded by the second researcher using a camera. Before leaving the house, a document including information on the steps of completing stay dry form, the video that was recorded by the second researcher and the forms that she will use for a week were given to the mother. The mother shared the photos of this form on WhatsApp application with the first researcher for a week. Besides, she also informed the first researcher on what happened that day and her questions were answered by the first researcher. At the end of 7 days, the researchers calculated the mean period of Ece's staying dry using the whatsapp messages that were sent by the mother and asked for an appointment for daytime toilet training.

Daytime toilet and token system training: The researchers paid a second visit on the agreed day and time to Ece's house to give training on daytime toilet training and how the token economy system was used during this process. First of all, what the symbol chart was and how it would be used was explained Ece by the second researcher. Then, the first researcher and the mother sat at a table next to each other in the living room. The steps of daytime toilet training were introduced to her orally and by showing the token economy chart, its use was explained. Next, by introducing the progress form used during the training, how she would use it was explained on an empty form. Then, the mother was asked to rehearse a sample training day using the token economy system and fill in the form. While the mother was improving her skills, the first provided her with feedback on her mistakes or on the things she did not complete on the form. These stages were recorded by the second researcher. Before leaving the house, a document including information on the steps of daytime toilet training, the videos that were recorded by the second researcher, the token economy chart and the symbols and empty progress forms that she would use during the training were given to the mother. Every day during the training, the mother shared the progress forms and the token economy chart with the first researcher on WhatsApp. Moreover, she informed the first researcher on the things they experienced during the training day on the phone and her questions were answered by the same researcher. Based on the progress forms obtained from the mother and the phone calls made, the researchers asked for an appointment from the mother for nighttime toilet training after they determined that Ece urinated in the toilet at a %80 rate during the day when she is awake.

The training of nighttime toilet training: The researchers paid a third visit on the agreed day and time to Ece's house to give training on nighttime toilet training and how token economy system was utilized. The first researcher and the mother sat at a table next to each other in the living room of Ece's house. The steps of nighttime toilet training were introduced to the mother orally and by showing the token economy chart, how it was going to be used in nighttime toilet training was also explained. Then, by introducing the progress form used during the training, how she would use it was explained on an empty form. Next, the mother was asked to rehearse a sample nighttime training day using the token economy system and fill in the form. First of all, what the symbol chart was and how it would be used was explained Ece by the second researcher. While the mother was improving her skills, the first researcher provided her with feedback on her mistakes or on the things she did not complete on the form and answered her questions. These stages were recorded by the second researcher. Before leaving the house, a document including information on the steps of nighttime toilet training, the videos that were recorded by the second researcher, the token economy chart and the symbols and the empty progress forms that she would use during the training were given to the mother. During the training, the mother shared the progress forms and the token economy chart with the first researcher on WhatsApp every day. In addition, she informed the first researcher on the things they experienced during the training day on the phone and her questions were answered by the same researcher. The researchers paid a last visit to Ece's house to explain when and how the observation forms would be

collected after the progress forms and telephones they got from the mother, to leave empty forms and perform validity form.

Baseline. Ece's record of staying dry for seven days has been recorded by her mother. When Ece was awake and not at school, her mother performed the nappy control every half an hour. Releases of urine in the toilet or in nappy was written down on the record form, and at the end of the day she shared the results with the first writer via WhatsApp. During this phase, Ece was diapered.

The process of daytime toilet control training: By evaluating the baseline records that the mother kept at home, the mean stay dry time for Ece was determined by the researchers and the training was launched based on this data. Accordingly, the mean stay dry time for Ece was found as 49 minutes. After the determination of her mean stay dry time, Ece's mother started the daytime toilet training. In the course of the training, Ece was not diapered during the time when she was awake; instead, she wore underwear and pants. By following the intervals of taking her to the toilet which was determined by the researchers based on the stay dry time, the mother started the implementation with the steps in Table 1.

Table 1. The Basic Steps of Daytime Toilet Training Implemented through the System Called Token Economy by Her Mother

1- Her mother, when Ece wakes up, takes her nappy off and says to Ece "from now on, if you want to urinate or defecate, you will use the toilet and I am just going to diaper you when you are sleeping. If you use the toilet, I am going to give you, or we will do", and following this, she makes her sit onto the commode. She waits, until Ece urinates. If she does not urinate in 10 minutes, her mother takes her out of the toilet. From this point, she waits for the completion of the intervals for taking her to the toilet.

2- 5-10 minutes before toileting, she takes Ece to the toilet (while taking her to the toilet or being seated on the commode, her mother tells that she may need to urinate, that she should sit on the commode and pull her pants and underwear down, and at the same time she helps Ece as well), makes Ece sit on the commode (when the time runs out, Ece should have been sitting on the commode).

3- Around 5-10 minutes after sitting on the toilet,

- If Ece urinates, she will be rewarded. She is taken out of the toilet and waits for the next toileting time.
 - If Ece does not urinate, without saying her anything her mother takes her out of the toilet and she keeps her busy with another activity for 5 minutes. After some time, she takes Ece to the toilet, makes her sit on the commode and waits for 5 minutes. If Ece urinates, then she is rewarded immediately, but if not; the mother takes her out of the toilet and waits for the next toileting time.
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4- Her mother marks each urination and their time on the development record form.

At the end of each day, the mother shared the progress forms and the token economy chart with the first researcher via whatsapp. The mother was told to remove the symbols on the chart when the symbols that Ece won were consistent with the progress form and give Ece one of the reinforcements that were determined previously by offering her an option. In this way, by observing the progress that Ece made, it was decided whether the symbols were converted or it was time to go on the next phase by the researchers. When Ece met 80% dryness level for 3 days in a row, the implementation kept going on by increasing the time of taking her to the toilet for 10-15 minutes. When Ece was brought to the toilet in every 2 hours which was pointed out in the long-term goal set for her at the beginning of the study, without the necessity of reaching least 80% dryness, in the end of the 7th day of the study, she started to say her mother when she needed to urinate.

The process of nighttime toilet control training: After Ece succeeded in expressing that she needed to urinate and she urinated in the toilet when her mother took her there in daytime training, nighttime toilet training was initiated. Ece was not diapered during this training and her mother started the implementation with the steps in Table 2.

Table 2. The Basic Steps of Nighttime Toilet Training Implemented by Her Mother

1- The mother reduces the amount of liquids she gives to Ece in the evening, and she gives her nothing liquid to her 1.5-2 hours before going to sleep.
2- She brings Ece to the toilet before going to the bed.
3- Her mother tells Ece that if she finds a dry bed in the morning, she will give a symbol and the end of week she can won a reward that before determine.
4- 1.5 hours after Ece sleeps, the mother wakes her up. If it is dry, Ece is brought to the toilet and makes her urinate. If it is wet, without saying anything, her clothes are changed, and at both cases her mother keeps recording. If it is wet, waking Ece up 1.5 after going to bed, the mother cleans the bed and on the following day she wakes her up 5 minutes earlier. If it is dry, at the first time when she was waken up, she makes Ece urinates in the toilet by waking her up at the same hours on the following 3 days.
5- If the bed is dry in the morning, the mother rewards Ece. If the bed is wet, without saying anything to her, the mother changes the bedsheets and her clothes.

In the study, the steps of nighttime toilet control written in table 2 were conducted at 3 phases for Ece as is seen from table 3 below. After she attained nighttime toilet training, the steps of stopping liquid intake 1,5 – 2 hours before going to bed and taking her to the toilet were sustained to reduce the risk of having an accident.

Table 3. The Phases of Nighttime Toilet Control Training for Ece

Phases	Before going to bed	After going to bed	Morning
Phase I	Stop taking liquids 1.5-2 hours ago Taking to the toilet	Control one and half an hour later Taking to the toilet	Dryness control
Phase II	Stop taking liquids 1.5-2 hours ago Taking to the toilet	Control one and forty-five minutes Taking to the toilet	Dryness control
Phase III	Stop taking liquids 1.5-2 hours ago Taking to the toilet	-	Dryness control

The mother shared the results with the first researcher via whatsapp every morning. By doing so, the researchers were able to observe Ece's improvements, and decided what to do or if it was time to go on the next phase by the researchers. On the last day of the week in question, the mother was asked to remove the symbols on the chart when they were in accordance with the progress form and give Ece one of the reinforcements that were determined before by offering her an alternative.

Maintenance sessions

On the 30th, 40th and 50th day following the end of the day and nighttime toilet control training, Ece's mother gathered her observation data using the progress record form. Then, she shared the data with the first researcher via WhatsApp at the end of the day. During the observation sessions, stopping liquid intake 1,5 – 2 hours before going to bed and taking her to the toilet were continued by the mother in line with the researchers' advice.

Implementation reliability

During the research, an implementation reliability form was developed to determine whether the training regarding the implementation steps that was included in the toilet control training package were administered reliably by the researchers. At the end of the implementation, apart from the researchers, two special education specialists determined if the researchers had administered the steps

on the Implementation Reliability Data Forms correctly or not by ticking “yes” or “no” sections on the forms when they watched the video footages. Implementation reliability coefficient was calculated by dividing the observed administrator behavior by planned administrator behavior and getting the percentage (Kırcaali İftar & Tekin İftar, 2012).

Social validity form

A social validity form was developed to find out the mother’s opinions regarding the study. The form consists of three open ended questions that are “to what extend did this study meet your requirements regarding your child’s toilet training? What are the aspects that you liked about the study? What are the aspects that you did not like about the study?” After Ece acquired day and nighttime toilet control %100, the family was visited by the researchers and the social validity form was implemented.

Results

The findings of the study were explained by categorizing under two topics; daytime toilet control training and nighttime toilet control training.

Findings of daytime toilet control training

With the purpose of determining the effect of “Toilet Training Control Package” on gaining the ability of toilet control for Ece; the data gathered at the starting level and during the phases of implementation and sustainability was indicated in the graph, and then the graph was qualitatively analysed.

In figure 4, it has been indicated that the data informing about the releases of urine in or out of the toilet during the training. According to this, during the nappy controls conducted at the starting level for Ece, it is seen that Ece urinated always on her nappy at daytime and that the percentage of urination in the toilet accounts for 0%. On the first day of the training, because she urinate at least 80% in the toilet, Ece was taken to the toilet following two days at the same intervals. Since these both two days could meet the criterion, on the 11th day it was increased to 60 minutes.

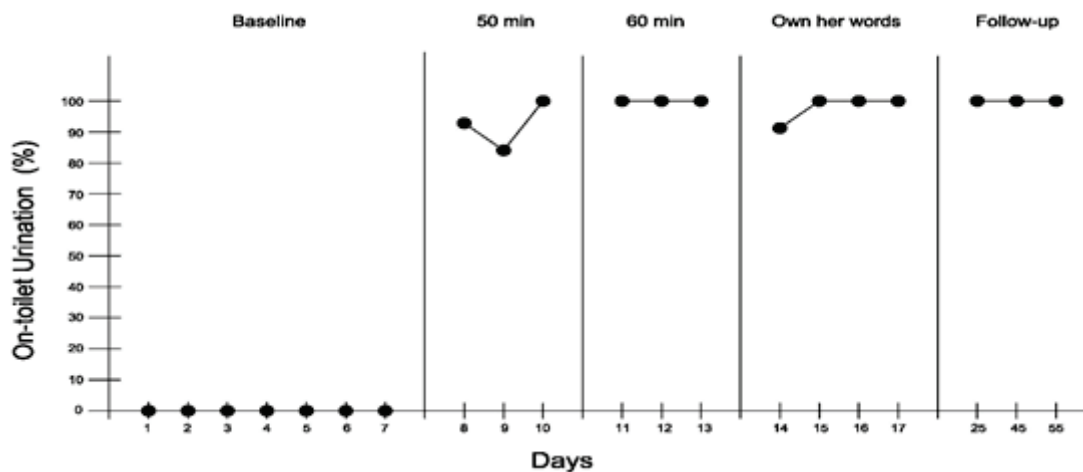


Figure 4. Percentage of Ece’s on-toilet urination

The three days in a row on which 60 minute’s intervals was being implemented, a level of 100% urination occurred. On calling the mother, she said that Ece began to tell when she needs to urinate. By looking at her statement, from the 14th day, the mother began taking Ece to the toilet when she told that she needed to urinate. During this process, at least %80 for 14 days and for the following 3 days she urinated in the toilet at the level of 100 % after telling her need and being taken to the toilet. By examining the records kept 30, 40 and 50 days after completing the toilet control training, it can be seen that the ability of toileting in the toilet can be maintained by Ece at a level of 100%.

Findings of nighttime toilet control training

With the purpose of evaluating the effect of “The Toilet Training Package” on gaining the ability of nighttime toilet control for Ece, the data gathered at the stages from her starting level, the phases of implementing and sustainability were indicated in the graph, and then the graph was qualitatively analysed.

On figure 5; the data were being indicated regarding Ece’s toilet control during the training. Given these circumstances, looking at the controls conducted at the starting level for Ece, she did every release of urine on her nappy, which indicates that the percentage of urine releases in the toilet accounts for 0%. At the first stage of training (taking her to the toilet before going to bed, control-taking to the toilet 1.5 hours after sleeping and checking the bed in the morning), Ece woke up dry in the mornings for five days at a level of 100%. As she showed a significant success of 100% for five days, the second phase at the 6th day of training was initiated (taking her to the toilet before going to the bed, control-taking to the toilet 1 hour and 45 minutes after sleeping, checking the bed in the morning).

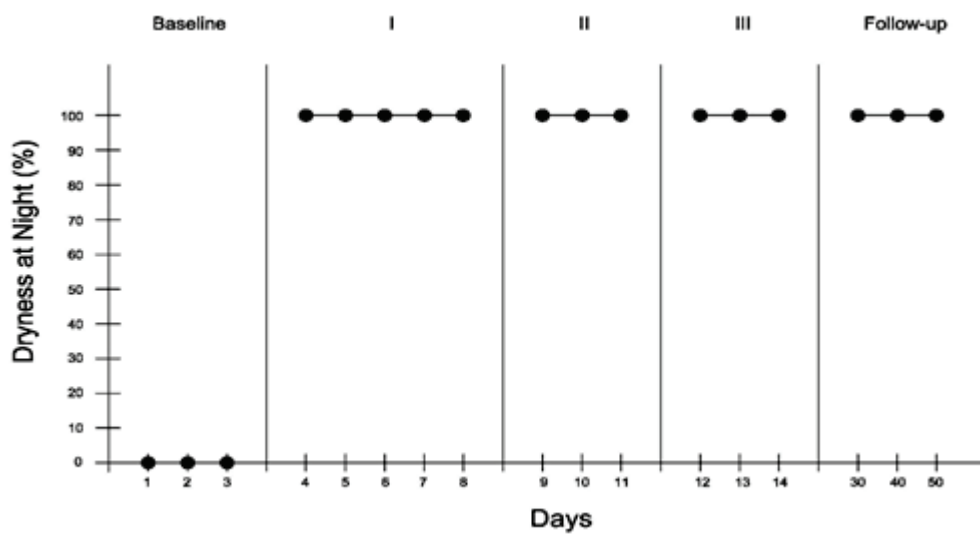


Figure 5. Percentage of Ece’s dryness at night

Second and third days of second phase, when Ece was waken up, the bed was dry and taken to the toilet she did not urinate, additionally; at the third day before going to the bed when her mother wanted to take her to the toilet, she told that she did not need to urinate and so she did not go to the toilet. Consequently, during this process three days in a row, Ece woke up 100% dry in the mornings. In the light of this information, the third phase of nighttime toilet control was started (taking her to the toilet before going to bed and checking the bed in the morning). At the third phase, when Ece was taken to the toilet before sleeping, she did urinate, and she woke up 100% dry three days in a row in the mornings. By analysing the records kept 30, 40 and 50 days after completing the nighttime toilet control training, it can be seen that the ability of daytime and nighttime toilet control can be maintained by Ece at 100% level.

Findings of Credibility of Implementation and Social Validity

In the study, “Toilet Control Training Package” have been evaluated in terms of credibility of implementation and social validity. As a result of watching the videos of implementation by two experts in the field, and according to their markings on the data collection forms of credibility of implementation; it has been found that the credibility of implementation accounts for 100% at every stage of each training phases.

The social validity form which was developed to determine the social validity of the implementation was administered on the first day of the completion of the study by interviewing the mother face to face. Accordingly, the mother explained that the gain of toilet control will serve that she can live more independently in the future, and that the training is efficient and useful for teaching the ability of toilet control, also added that families demanding toilet control for their children may find this training as efficient and useful as well.

Discussion

Despite limited case study, the results indicate that the daytime toilet training package in which the token economy system was used and traditional nighttime toilet training have been effective on toilet training for a multiple disabled child. As it can be seen from the starting level, before the study Ece was not ever urinating in the toilet at daytime and did not express the signs of urination need. During the daytime toilet training, when Ece was taken to the toilet at certain intervals by her mother and urinated into the toilet, symbols were stuck on the chart with her mother; however, when she could not, this behavior was ignored and she could not get a symbol. As a result of implementing the token economy system with tactual symbols using aforementioned ways, the impression that Ece learned the relationship between her urination/defecation in the toilet and her being given a symbol. Especially, when her urination/defecation in the toilet turns into a reinforcement that she wanted in the evening, her behavior of urinating and defecating in the toilet was observed to increase. She even started to express verbally that she needed to go to the toilet from the 6th day on the training. At this point, when Ece expressed that she needed to go to the toilet, the mother did not wait for a period of time and took her to the toilet just like children who acquired their toilet control. The use of daytime toilet training and the token economy system which is a positive reinforcement is thought to be effective in Ece's gaining daytime toilet training. This finding supports the results of the studies in the literature in which positive reinforcement is used in toilet training. (Azrin & Foxx, 1971; Azrin et al., 1973, 1974; Foxx & Azrin, 1973; Azrin et al., 1979; Azrin & Thienes, 1978; Cicero & Pfadt, 2002; Cocchiola et al., 2012; Duker, Averink, & Melein, 2001; Kroeger & Sorenson, 2010; LeBlanc et al., 2005; Lee, Anderson, & Moore, 2014; Luiselli, 1994, 1997; Post & Kirkpatrick, 2004; Ricciardi & Luiselli, 2003; Rinald & Mirenda, 2012; Saloviita, 2000, 2002; Sells-Love et al., 2002; Sönmez & Varol, 2008, 2009; Sönmez & Aykut, 2011; Özkubat & Töret, 2014;)

In the study, following the gain of toilet control; Ece was trained for the nighttime toilet control as well. This training was carried out by using the steps of nighttime toilet control. Consequently, Ece gained the ability of nighttime toilet control right after for 11 days of training. Although the nighttime toilet training finished but still including the steps which consist of; cutting fluid intake 1.5-2 hours before going to sleep and taking to the toilet has sustained with the aim of reducing accidents. That the beginning of nighttime toilet control just after gaining the ability of daytime toilet control and the positive reinforcements in which the effective reinforcements were used (token economy) has been considered as effective. Except for a few studies in which quick nighttime toilet control was used (Azrin et al., 1979; Azrin et al., 1973, 1974; Azrin & Thienes, 1978; Saloviita, 2002), no studies were found which involve nighttime toilet control in the literature. Therefore, this research is thought to be the first study in the literature in which both day and nighttime toilet control were acquired.

No systematic study regarding the behavior chain involved in the toilet training (pulling pants and underwear down, sitting on the commode and then stand up, pulling underwear and pants up) has been conducted so far. When the mother took Ece to the toilet, it was recommended she teach Ece the ability of pulling her pants (underwear) down on her own (taking into account the boundaries her orthopaedic incompetency) by saying "pull your pants down, Ece" and holding her hands, however; any data regarding this situation have not been gathered.

According to the findings of the social validity form, Ece's mother stated that Ece acquired her day and nighttime toilet control, they got rid of diaper expenses, diapering her and the wounds in her genital area. She suggested that a more comfortable life began both for Ece and herself and she was not expecting that Ece could learn this quick adding that this research was a chance for her to see this. Moreover, she said that she was happy with the study and the researchers changed her and Ece's life. She stated that she would encourage other families being the same condition to benefit from this method. Although this study has limitations in generalizing due to being a case study, it is thought that it is significant socially in that it touched a family's life and improved their standard of living.

It is thought that the day and nighttime toilet training package used in this study can be an important resource for the teachers and experts working in this field. A six-year old child who has multiple disabilities was studied in this research. This study could be reproduced involving children having different disabilities and at different ages. Although the mother was trained on how the toilet training process was going to be implemented, the calculations of stay dry period and the progress were carried out by the researchers. Based on these calculations, the intervals regarding taking Ece to the toilet was also determined by the researchers; thus, this skill was not taught to the mother, which is a limitation of the study. In this respect, future studies could be designed in which this education is given to the mother. Besides, by changing the variables involved in this study such as token economy, their effects could be investigated. By preparing a toilet control training package similar to the one used in this study, it could be made accessible in the internet or CDs for parents and the effect of its use could also be examined.

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